The Ocean Conservancy
Oceana
Alaska Oceans Program
National Environmental Trust
Center for Biological Diversity
Defenders of Wildlife

April 15, 2004

Dr. James Balsiger, Administrator
Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

RE: Comments on the Draft Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska

Dear Dr. Balsiger:

The undersigned organizations submit these comments concerning the Draft Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska ("DEIS") for consideration by the National Marine Fisheries Service.[1] The analyses provided and conclusions reached in the DEIS are fundamentally flawed and unlawful. The information disclosed in the DEIS establishes that current fishing practices and patterns cause significant long-term damage to essential fish habitat ("EFH"), as further described below. Accordingly, the Fisheries Service is legally required to minimize those effects. The agency has, however, arbitrarily concluded in this DEIS that minimization measures are unnecessary, despite clear evidence to the contrary. By allowing continued industrial fishing that reduces the quantity and quality of EFH, the agency is violating the mandates of the Magnuson-Stevens Act ("MSA") and the National Environmental Policy Act ("NEPA"), among other statutes.

These comments focus on the DEIS's unsupported conclusion that there are no adverse effects of fishing that are more than minimal and not temporary, and therefore that no changes to fishing practices are required. The undersigned organizations request that the Fisheries Service, guided by the proper legal and regulatory standards and considering all relevant information, substantially revise the DEIS and take the requisite hard look at the ongoing destruction of sensitive habitats throughout Alaska. Should the agency do this analysis properly, it will conclude that there are adverse effects from fishing on EFH that must be minimized. The undersigned organizations request that the Fisheries Service adopt comprehensive habitat regulations designed to ensure the continued health of our public resources.

If, contrary to the best available scientific information and the requirements of federal law, the agency declines to revise the DEIS's analysis and conclusions, we request a specific explanation

[1] Some of the undersigned organizations have submitted additional independent comments, to be considered in conjunction with these group comments.

articulating the Fisheries Service's rationale for its failure to make all requested modifications and/or consider all relevant information.

These comments provide an outline of the agency's NEPA and MSA obligations and failures, followed by a discussion of and further examples from the DEIS illustrating its deficiencies.

I. The DEIS Does Not Satisfy the Requirements of the National Environmental Policy Act

NEPA requires the Fisheries Service to consider all reasonable alternatives to its proposed action, and take a hard look at the environmental impacts of the alternatives. The DEIS fails in both these regards. Additional deficiencies of NEPA's procedural and analytical requirements are provided below and in other sections of these comments.

NEPA is the "basic national charter for protection of the environment." 40 C.F.R. § 1500.1. Congress' goal in enacting the statute was "to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." Id. To meet this purpose, NEPA requires that agencies prepare an environmental impact statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C); see also American Oceans Campaign v. Daley, 183 F.Supp.2d 1 (D.D.C. 2000). An EIS "is more than a disclosure document" and is to "be used by Federal officials in conjunction with other relevant material to plan actions and make decisions." 40 C.F.R. § 1502.1. It is, therefore, "an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government." Id. The DEIS fails to meet these mandates.

Inadequate Alternatives

The DEIS' alternatives to minimize the adverse effects of fishing on EFH are inadequate. NEPA requires that an EIS "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. 1502.14. The comparison of alternatives "is the heart of the environmental impact statement." Id. The DEIS, however, does not include all reasonable alternatives reflecting the full range of minimization options.[2]

When examined by region, habitat type, individual fisheries, and mitigation tools, the actual number and diversity of alternatives presented to the public are few, denying the public and decisionmaker not only the vital information and analyses necessary to make an informed choice, but also denying much choice at all. For example, several of the alternatives reflect substantially similar treatment of fishing in certain areas, denying the public and decisionmaker with choices amongst alternatives. See, e.g., treatment of Bering Sea in Alternatives 4 and 5. The alternatives also fail to focus on fisheries identified by the agency's own model as those that have the most significant adverse impact.

[2] This flaw is not confined to the minimization alternatives. For example, the "Adopt an Approach for Identifying HAPCs" range of alternatives fails to include an option that would permit designation of HAPCs by both type and site, and that builds on the currently-designated HAPCs. This option is clearly reasonable, and should be considered in the Final EIS and adopted in the Record of Decision.

In addition, despite identification in the regulations of three categories of tools to address the adverse effects of fishing – fishing equipment restrictions, time/area closures and harvest limits – the DEIS does not include combinations of these tools in multiple alternatives. 50 C.F.R. § 600.815(a)(2)(iv). According to the National Research Council, "[e]ffort reduction is the cornerstone of managing the effects of fishing, including, but not limited to, the effects on habitat." (NRC 2002). The agency itself validated the applicability of this conclusion to the North Pacific groundfish fisheries in its DPSEIS analysis. Nevertheless, without sufficient analysis the Fisheries Service rejected as impracticable an alternative that would reduce total allowable catch to reduce effort.

The DEIS's failure to include consideration of research closures is further illustration of the lack of a full range of reasonable alternatives. While the EFH regulations specifically identify "consider[ation] of the establishment of research closure areas or other measures to evaluate the impacts of fishing activities on EFH" during the fisheries evaluation, 50 C.F.R. § 600.815(a)(2)(i), and despite recognition by scientists of the utility and importance of research closures, see, e.g., Heifetz 2000 (revised May 2003), Effects of Fishing Activities on Benthic Habitat Proposed Research Plan for the Alaska Region, an agency-proffered research closures proposal was not included in the DEIS.

The failure to include a full range of minimization alternatives in the DEIS denies the public and the decisionmaker a clear basis for choice among the alternatives and is unlawful.

Of the minimization alternatives that actually are included in the DEIS, the majority are not responsive to EFH mandates, and do not reflect the Fisheries Service's scientific expertise, the wealth of literature on habitat protection, or the best available information about the adverse effects of fishing. For example, rather than focus on important habitat areas that require protection from fishing, most of the alternatives focus on areas in which there is little fishing and which therefore could be protected with the least economic impact.

The inadequacy of the alternatives appears in part to be due to the Fisheries Service's apparent acquiescence to the North Pacific Fishery Management Council ("NPFMC") and its various bodies, including its Essential Fish Habitat Committee ("EFH Committee") in the development of alternatives. For example, as mentioned above, during the development of the DEIS, the Fisheries Service proposed consideration of a detailed set of research closures. The Council rejected the research closures, and the agency acceded.

While the ultimate responsibility for legal compliance lies with the Fisheries Service, the agency followed the NPFMC's direction, both in terms of constriction of the purpose of and concepts for minimization alternatives, and in the rejection of reasonable minimization alternatives.

The agency is responsible for providing the public and the decisionmaker with a full range of reasonable alternatives. The agency's legal mandate, and not the preferences of the NPFMC, must control the selection and consideration of alternatives. See Simmons v. United States Army Corps of Engineers, 120 F.3d 664, 670 (7th Cir. 1997) (by "focusing on the single-source idea [for a water supply], the Corps never looked at an entire category of reasonable alternatives and

thereby ruined its environmental impact statement"); Sierra Club v. Marsh, 714 F. Supp. 539, 577 (D. Me. 1989) ("A project's principal goals must override the stated preferences of the applicant for purposes of NEPA's 'reasonable alternatives' analysis"); 46 Fed. Reg. 18,026, 18,027 ("Reasonable alternatives include those that are *practical or feasible* from the technical and economic standpoint and using common sense, rather than simply *desirable* from the standpoint of the applicant") (emphasis in original). Rejection by the NPFMC or its bodies of reasonable alternatives does not obviate the agency's legal duty to consider fully and fairly all reasonable alternatives. Selecting and finalizing alternatives by the vote of a non-federal body composed primarily of non-scientists undermines the fundamental mandates of NEPA.

The Fisheries Service is obliged by law to consider all reasonable alternatives designed to minimize the adverse effects of fishing on EFH. Failure to do so renders this EIS unlawful.

Hard Look

In addition to the flaws in the composition of the alternatives themselves, the agency's analysis of the effects of the alternatives is inadequate. The DEIS fails to consider all relevant information, fails to consider fully and fairly the direct, indirect and cumulative effects of fishing on the environment, and fails to explain these impacts to the public in an understandable fashion, in violation of NEPA.

Relevant Information

The DEIS fails to consider all relevant available scientific information, which has contributed to its arbitrary conclusions. This defect must be remedied in the Final EIS. It is clear from the developing body of evidence that fishing does affect habitat in a manner that is both significant and long-term (i.e. more than minimal and not temporary). This developing scientific consensus is reflected in the attached letter from dozens of marine Ph.D. scientists specifically questioning the DEIS' use of commercial fish stock size as the measure of habitat impact, rather than the effects of fishing on habitat itself, questioning the conclusion that the effects of current fishing practices on sensitive benthic habitats are inconsequential, and calling for immediate protection of Alaska's corals.[3] See Attachment #1 at 2.

This scientific consensus is further reflected in the significant body of relevant scientific literature, much of which apparently was not considered in this DEIS. We have provided the citations and abstracts for this missing literature. See Attachments #2, #3, and #4. Finally, this scientific consensus is shared internationally, see Attachment #5, and has led other nations to protect their sensitive habitats from the adverse effects of fishing, a rational response to the available information.

It is clear that the approach taken and conclusions reached in this DEIS are contrary to the national and international scientific consensus about the existence and degree of habitat damage caused by destructive fishing practices and the need for immediate protection of important habitats. Failure to modify the analysis and revisit the conclusions, employing the proper legal and scientific standards, will render the Final EIS arbitrary.

[3] The arbitrary nature of this fish stock size approach is further described below.

Consideration of Uncertainty

The DEIS fails to make rational decisions in light of scientific uncertainty. EISs are more than mere disclosure documents. It is not sufficient merely to state that information is missing. See, e.g., American Oceans Campaign, 183 F.Supp.2d at 20 (criticizing Fisheries Service for "simply stat[ing in earlier EFH Environmental Assessment] that no data is available, and therefore it cannot assess the environmental impact."). The implications of any relevant but missing information must be laid bare and actually considered and incorporated into decisionmaking. The DEIS fails in this regard.

For example, while the DEIS discloses the uncertainty associated with the models, it fails to discuss sufficiently the relevance of that uncertainty, and fails to incorporate that uncertainty into the conclusions reached. Even more significantly, the DEIS fails to discuss the implications of the substantial number of "unknown" ratings for numerous species. See DEIS Appendix B. Ultimately, the information displayed in Appendix B is pivotal to the conclusion that no effects of fishing need to be minimized. The Fisheries Service does not explain how the substantial number of unknown ratings can rationally result in a conclusion that the status quo meets MSA's mandates.

The DEIS also unlawfully fails to comply with the NEPA procedure outlined for incomplete or unavailable information, fails to describe adequately methodologies used in the EIS, particularly the expert evaluations, and fails to identify specifically all scientific and other sources relied upon for its conclusions. 40 C.F.R. § 1502.22; 40 C.F.R. § 1502.24.

Public Participation

One of the cornerstones of NEPA is the solicitation and consideration of informed public views on agency decisionmaking. This DEIS undermined meaningful public participation. 40 C.F.R. § 1506.6; E.O. 12898. For example, the location of public meetings on the DEIS focused on major urban areas where the Fisheries Service has offices – Seattle, Anchorage and Juneau – rather than in Alaskan communities where ecological harm from industrial fishing practices is felt.

Finally, the Fisheries Service is preparing this EIS in an effort to come into compliance with the National Environmental Policy Act, following a ruling by a federal district court that the agency's previous NEPA analysis was unlawful. By permitting status quo fishing practices that have adverse effects on Essential Fish Habitat and/or Habitat Areas of Particular Concern to continue during the development of this EIS, the Fisheries Service is prejudicing the selection of the status quo before making a final decision, in violation of NEPA's dictates. 40 C.F.R. § 1502.2(f); 40 C.F.R. § 1506.1.

In addition to NEPA procedural and analytical failures, the DEIS and the actions (or decisions not to take actions) contemplated therein violate the Magnuson-Stevens Act mandates.

II. The DEIS Does Not Satisfy the Requirements of the Magnuson-Stevens Act

One of the primary purposes of the 1996 Sustainable Fisheries Act amendments to the Magnuson-Stevens Act is to protect habitat. Accordingly, Congress imposes on the Fisheries Service the duties to describe and identify Essential Fish Habitat, and to minimize the adverse effects of fishing on EFH to the extent practicable. 16 U.S.C. § 1853(a)(7). The DEIS fails to employ the proper legal standards, fails to consider all relevant information, and reaches arbitrary conclusions.

Rather than consider the effects of fishing on habitat, the DEIS considers the effects of fishing on the productivity of fish, and concludes that there are no effects of fishing in the North Pacific that require minimization. Under its analysis, the Fisheries Service will minimize adverse effects of fishing on EFH only if there is evidence of adverse effects of fishing on a targeted species. Such a requirement is contrary to the law. Accordingly, the conclusions reached in the DEIS and analysis designed to support them do not comply with MSA mandates, and are arbitrary and capricious.

MSA Procedure

The MSA delineates the procedure for describing and identifying EFH, and minimizing to the extent practicable the adverse effects of fishing on EFH. This procedure has two distinct steps. First, EFH is described and identified. Second, the adverse effects of fishing on designated EFH are evaluated, and minimized to the extent practicable.

Essential Fish Habitat

To aid in the first step, Congress defined "essential fish habitat" broadly, as waters and substrate "necessary" to fish for "spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10).[4] Congress similarly defined "fish" broadly to include "finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds." 16 U.S.C. § 1802(12).[5] Thus, the description and identification of EFH considers habitat in relation to the sustainability of all marine wildlife in the fishery, whether targeted or not, and the contribution of that wildlife to the ecosystem.[6]

Adverse Effect

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[4] The Fisheries Service defined "necessary" to mean "the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem." 50 C.F.R. § 600.10.

[5] Accordingly, the Congressional definitions of "fishery" and "fishing" are broad, encompassing all forms of marine life other than mammals and birds, and including actions which unintentionally catch them: The term "fishery" means "[o]ne or more stocks of fish that can be treated as a unit for purposes of *conservation* and management and which are identified on the basis of *geographical, scientific*, technical, recreational, and economic characteristics...." 16 U.S.C. § 1802(13)(A) (emphasis added). The term "fishing" includes "any [] activity which can reasonably be expected to result in the catching, taking, or harvesting of fish...." 16 U.S.C. § 1802(15)(C).

[6] In its evaluation of its duty to minimize the adverse effects of fishing, the Fisheries Service selected as its standard for action consideration of sustainable fisheries and managed species' contribution to the ecosystem. In so doing, the agency unlawfully failed to consider the proper legal standards. Even were such standards lawful, the agency failed to comply with its own regulations by focusing its consideration on targeted commercial stocks. These issues will be discussed further below.

Once EFH has been described and identified, the Fisheries Service must take the second step, and consider the universe of adverse fishing effects on that EFH. The statute makes clear that the duty to minimize adverse effects focuses on the effects of fishing on habitat. See 16 U.S.C. § 1853(a)(7) (duty to "minimize...adverse effects on such habitat caused by fishing) (emphasis added). The regulations similarly make clear that the inquiry regarding whether there are adverse effects to EFH focuses on whether a fishing activity has any affect on the quality or quantity of EFH, not on whether there is a decline in a fish stock's population:

> Adverse effect means *any impact that reduces quality and/or quantity of EFH.* Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and *loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components*, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include *site-specific* or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

50 C.F.R. § 600.810(a) (emphases added). Thus, in order to determine the universe of adverse effects that may require measures to minimize, the Fisheries Service must examine any and all impacts that reduce the quality or quantity of the habitat itself. These impacts include considerations of benthic organisms, prey species and their habitat, and other ecosystem components. In other words, the adverse effects inquiry is a broad one, focused on the effects of fishing on habitat and elements of the ecosystem, and not limited to the effects of fishing on fish stocks themselves.

The agency must also perform a cumulative impacts analysis, which is to consider impacts on the environment. 50 C.F.R. § 600.815(a)(5).

Based on the adverse effects evaluation and the cumulative impacts analysis, the "Council must prevent, mitigate, or minimize any adverse effects from fishing, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature... ." 50 C.F.R. § 600.815(a)(2)(ii).

In determining whether it was obliged to minimize adverse effects of fishing on EFH, rather than focus as Congress commanded on the adverse effects of fishing on habitat or the cumulative impacts to the environment, the Council and Fisheries Service focused instead on the effects of fishing on fish. This approach violates the law.

Minimum Stock Size Threshold

To determine whether the adverse and cumulative effects of fishing must be minimized (i.e. whether the effects are more than minimal and not temporary), the Council and Fisheries Service focused largely on the ability of targeted species to support a sustainable fishery, and the role of those species in a healthy ecosystem:

> The ability of the species to maintain populations above Minimum Stock Size Threshold (MSST) was selected to represent the ability of the species to support a sustainable fishery. ... No similar benchmark was available for the role of each species in a healthy ecosystem. ... [U]nless the evaluating scientists knew of ecosystem functions of the species that required a higher threshold level, they were instructed to use ability to stay at or above MSST as proxy for that criterion as well.

DEIS, App. B at 24-25. In so doing, the agency relied on an improper legal standard for at least three reasons, as described below. Further analytical failures inherent in this approach are described following this section.

Species Welfare

Congress established two distinct EFH requirements,[7] and the regulations established distinct standards for each requirement. In determining which habitat to describe and identify as EFH, the regulations require broad consideration of the concepts of sustainable fisheries and the contribution of all marine wildlife in the fishery to a healthy ecosystem.

Once EFH has been designated, different standards control. The Fisheries Service first evaluates all adverse effects, defined broadly to include effects on the quality and quantity of EFH; and cumulative impacts, defined broadly to include ecosystem impacts. The Fisheries Service then determines which of those adverse and cumulative effects are more than minimal and not temporary (MMNT) and therefore must be minimized.

The MMNT threshold is not the same as the EFH description and identification threshold. Congress required two separate actions, and the regulations require separate inquiries with different considerations. The EFH description inquiry focuses on the habitat needs of fish. The minimization inquiry focuses on the effects of fishing on the habitat itself, not on the needs of fish. Substitution of the EFH designation threshold for the adverse effects minimization threshold unlawfully conflates the two standards.

Rather than consider the effects of fishing on the quality and quantity of EFH, including alterations to substrate and loss of benthic organisms, prey species, and other ecosystem components, the DEIS analyzes whether there impacts to a species' welfare. Failure to employ the proper legal standards renders the analysis unlawful.

Productivity

Second, selection of a productivity measure as the threshold for "more than minimal and not temporary" effects is in direct contradiction with guidance concerning the minimization threshold outlined in the EFH Final Rule. The preamble to the final rule makes clear that:

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[7] Congress established a third requirement, that Fishery Management Plans "identify other actions to encourage the conservation and enhancement of [essential fish] habitat." 16 U.S.C. § 1853(a)(7). While this letter focuses on the first two EFH requirements, the DEIS also fails to meet the third requirement.

> It is not appropriate to require definitive proof of a link between fishing impacts to EFH and reduced stock productivity before Councils can take action to minimize adverse fishing impacts to the extent practicable. Such a requirement would raise the threshold for action above that set by the Magnuson-Stevens Act.

67 Fed. Reg. 2343, 2354 (Jan. 17, 2002). Nevertheless, in the DEIS the Fisheries Service has done exactly that.

MSST – Overfished Level

Finally, the selection of MSST as the threshold for minimization improperly conflates the legal standards for rebuilding overfished species with those for protecting habitat from the adverse effects of fishing.

According to National Standard 1, once a stock falls below the MSST threshold, it is considered overfished. 50 C.F.R. § 600.310(d)(2)(ii). In the Sustainable Fisheries Act, Congress established distinct and separate requirements to end overfishing and rebuild overfished species in one section, and to describe and identify and protect EFH to the extent practicable in another. Compare 16 U.S.C. § 1854(e) with 16 U.S.C. § 1853(a)(7). Had Congress simply intended for the Fisheries Service to protect habitat sufficient to prevent overfishing and rebuild overfished stocks, it would have said so. Instead, Congress directed the Fisheries Service to minimize the adverse effects of fishing on habitat, without reference to overfished levels. Limiting the scope of inquiry of the effects of fishing on habitat to an inquiry into whether species are overfished is contrary to Congress' commands and falls far short of the requirements to protect EFH envisioned by Congress.

Best Scientific Information Available

As described above, the DEIS fails to consider the best scientific information available. This failure violates not only NEPA's mandates, but also the MSA and National Standard 2. 16 U.S.C. § 1851(a)(2); 50 C.F.R. § 600.315; see also Attachments #2, #3, and #4. Conclusions reached without consideration of all relevant available information are arbitrary and unlawful.

Standing alone, the NEPA and MSA violations render the DEIS unlawful. The Fisheries Service must make fundamental changes to the alternatives, analysis, and conclusions in order for the Final EIS to pass legal muster.

III. The DEIS Analysis Is Deficient

In addition to the legal failures, the DEIS's process, analysis and conclusions are substantively and analytically flawed, rendering its conclusions arbitrary and capricious. While the DEIS contains valuable information about the effects of industrial fishing on marine habitats in Alaska, both the document and the public process contains flaws that render the analysis legally and scientifically inadequate. These deficiencies include:

- failing to use the best available science and data

- setting baselines that mislead the public about the real effects of fishing and ensure a conclusion of 'no adverse effects'
- justifying a decision already made
- drawing arbitrary conclusions when faced with unavailable and unknown information
- delegating the agency's public process to an industry-dominated process
- failing to analyze an adequate range of alternatives
- mischaracterizing the MSA's statutory mandate to minimize the impacts of fishing which reduces the quantity or quality of EFH
- failing to address substantial cumulative, habitat-wide and site-specific impacts
- mischaracterizing past and future management actions
- contradicting previous agency conclusions

Arbitrary Conclusions

The Magnuson-Stevens Act requires the agency to identify and designate EFH in Alaska. The MSA also requires NMFS to minimize to the extent practicable the adverse effects of fishing on EFH. The EFH Final Rule defines adverse effects as:

> any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.[8]

Although the DEIS indicates that industrial fishing in Alaska causes individual, synergistic, and cumulative impacts that reduce the quality and quantity of EFH through removal of and injury to virtually every habitat type at both the site-specific and habitat-wide levels, the Fisheries Service arbitrarily concludes that no Council managed fishing activities meet the regulatory standard requiring action to minimize adverse effects on EFH.[9]

This conclusion is contradicted by both the data and the agency's previous conclusions. For example, an average of 152,000 pounds of coral and 777,000 pounds of sponge were caught annually as bycatch in the Bering Sea and Aleutian Islands from the years 1997-2001.[10] This ongoing bycatch, which includes species of coral never before taxonomically identified, prompted the Fisheries Service in September 2003 to conclude:

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[8] 50 C.F.R § 600.810(1).

[9] See, e.g., the Abstract preceding pg. ES-1 in the DEIS' Executive Summary.

[10] Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement (A-T-535) ("DPSEIS").

impacts to long-lived, slow growing species (i.e., coral) could cause long-term damage and possibly irreversible loss of living habitat, especially in the Aleutian Islands.[11]

Although both observer data and video ground-truthing indicate ongoing bycatch of living habitat that may take up to 200 years to recover, the Fisheries Service indicates to the public in the EFH DEIS that historic and current fishing activity "**may** have destroyed coral and otherwise altered bottom habitat" and "**may** have had a negative effect on benthic habitat complexity in some areas."[12] Despite these qualifiers, evidence indicates that past and present trend effects for all habitat components (prey species, benthic biodiversity, and habitat complexity) continue to be affected under the current management regime. This further validation of the Fisheries Service's September 2003 conclusions regarding habitat damage, along with the agency's current modeling of Long-Term Effects Indices, indicate that habitat removal, with possibly irreversible consequences, will continue under the preliminary preferred alternative, which includes no new management measures specifically designed to minimize the adverse effects of fishing on EFH. This result is irrational.

Council Policy and Historic Management

Nevertheless, the Fisheries Service assures the public that habitat protection is provided under the present Council policy and various ad hoc management measures instituted to deal with specific fishery management crises (such as overfished crab stocks or endangered marine mammals). The Fisheries Service quotes in full the North Pacific Fishery Management Council's habitat policy statement, which includes a policy objective which will be implemented using a "guiding principle of no net habitat loss caused by human activities."[13] Instead of critically evaluating the North Pacific Fishery Management Council's failure to uphold this policy and detailing the net annual loss of various habitat types that occur every year under this policy, the Fisheries Service offers a list of other management measures that were "designed, at least in part, to protect habitat" or that "were adopted primarily for other purposes" but also have "been beneficial to fish habitat."[14]

While the Southeast Alaska Trawl Prohibition was adopted to protect habitat from the effects of trawling, the rest of the Gulf of Alaska, the Eastern Bering Sea, and the Aleutian Islands contain no measures specifically designed to protect comprehensively habitat from the adverse impacts of fishing. In fact, a review of the BSAI Fishery Management Plan illustrates the lack of measures to protect habitat. While the list of various management measures includes specific amendments that relate to prohibited species, economic allocation, reporting requirements, observers, and community development quotas, the "Habitat protection measures" section simply states that the FMP "authorizes the establishment of regulations to manage fishing vessels for habitat reasons."[15] No specific management measures are listed. The record makes clear that,

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[11] DPSEIS (4.1-5).
[12] See, e.g., Table ES-1 (Environmental Consequences Summary) (emphasis added).
[13] DEIS (2-2).
[14] DEIS (2-2, 2-3).
[15] DEIS (3-96).

protestations to the contrary, comprehensive habitat protection measures do not currently exist in the North Pacific. Reliance on status quo measures is arbitrary.

The Adverse Effects of Fishing on EFH

Although the DEIS concludes that there are "long-term effects of fishing on benthic habitat features of Alaska" that are not more than "minimal or temporary," evidence abounds of site-specific and habitat-wide effects in Alaska. This evidence includes scientific reports, observer data, video ground-truthing, the Fisheries Service's Long-Term Effects Index, and conclusions reached in the Draft Programmatic Supplemental Environmental Impact Statement for Alaska Groundfish Fisheries ("DPSEIS"). The Fisheries Service's conclusion that these adverse effects of fishing need not be minimized is contrary to the evidence.

In fact, the DEIS's own Long-Term Effects Index establishes that the preliminary preferred alternative (status quo management) will result in long-term reductions of benthic habitat features in Alaskan marine waters. Estimates of these reductions include:

- a 14-25% reduction in hard corals on the Gulf of Alaska slope
- a 4-21% reduction in hard substrate living structure on the Gulf of Alaska slope
- an 11-20% reduction in hard corals in Aleutian Island shallow habitat
- a 4-19% reduction in soft substrate living structure on the Aleutian Island slope
- a 3-19% reduction in soft substrate living structure in Bering Sea sand/mud habitat
- a 3-17% reduction in hard substrate living structure in Aleutian Island shallow habitat
- a 3-13% reduction in hard substrate living structure in Gulf of Alaska deep shelf habitat
- a 5-11% reduction in hard substrate non-living structure in Aleutian Island shallow habitat
- a 4-9% reduction in hard corals in Aleutian Island deep habitat
- a 2-10% reduction in hard substrate living structure in Gulf of Alaska shallow habitat[16]

Habitat-wide impacts that overlap with individual species distribution are also extensive. These include:

- a 35% reduction of living structure in Bering Sea sand/mud habitat estimated to provide 25-30% of red king crab habitat
- a 20-25% reduction of hard coral in Aleutian Island shallow water estimated to provide 24% of golden king crab habitat.
- a 15-20% reduction of living structure in Bering Sea sand/mud habitat estimated to provide 71-68% of tanner crab habitat.
- a 21-31% reduction of hard coral in Gulf of Alaska deep shelf habitat estimated to provide 35-47% of sablefish habitat
- a 30-40% reduction of hard coral in Aleutian Island shallow water habitat estimated to provide 44-50% of Atka mackerel habitat

[16] DEIS (Table B.2-8 "Long-term Effect Indices (LEI in % Reduction) for Fishing Effects on Benthic Habitat Features of Alaska Marine Waters by Habitat Type").

- a 12-14% reduction of living structure of Bering Sea sand/mud habitat estimated to provide 56-65% of Greenland turbot habitat
- a 13-15% reduction of living structure in Bering Sea sand/mud habitat estimated to provide 37-41% of rock sole habitat.
- a 17-31% reduction of hard coral in the Gulf of Alaska deep shelf habitat estimated to provide 34-51% of rex sole habitat.
- a 29-46% reduction of hard coral in Gulf of Alaska deep shelf habitat estimated to provide 30-32% of Pacific ocean perch habitat
- a 8-13% reduction of hard coral in Aleutian Island deep shelf habitat estimated to provide 22-36% of shortraker/rougheye habitat
- a 30-35% reduction of hard coral in Gulf of Alaska deep shelf habitat estimated to provide 57-60% of yelloweye rockfish habitat.
- a 41-42% reduction of hard corals in Gulf of Alaska deep shelf habitat estimated to provide 26-37% of northern rockfish habitat
- a 31-46% reduction of hard corals in Gulf of Alaska deep shelf habitat estimated to provide 57-69% of dusky rockfish habitat [17]

In addition to failing to consider adequately these significant habitat-wide effects, the DEIS fails to consider adequately the site-specific impacts from fishing. In fact, not only does the DEIS largely ignore site-specific impacts, but the analysis and conclusions effectively mask serious site-specific adverse effects by subsuming them in the aggregate. From the scientific perspective, the NPFMC's Scientific Statistical Committee specifically criticized the LEI analysis's tendency to subsume local effects.[18] Such an approach is equally flawed from the legal perspective. See, e.g., 50 C.F.R. § 600.810(a).

Site-specific information is readily available. Nevertheless, although observer coverage and reporting of data in Alaskan fisheries are often praised as a leading example of how fisheries data should be collected, the Fisheries Service does not present the best site-specific information available on damage to benthic habitat. While the DEIS repeatedly states that the distribution of corals and sponges are unknown, observer data offer readily available information on which gears are removing benthic habitat at disproportionate rates, and where. It is unlawful for the agency to decline to provide and consider this data to inform the public of site-specific impacts and to design protective measures to minimize these impacts.

In addition, while video submersible data have been collected for the past few years in Aleutian Islands habitat, the Fisheries Service fails to describe sufficiently the findings of this research and its implications for the adverse effects of fishing and minimization inquiry. The Fisheries Service must incorporate this best available scientific information into its analysis and conclusions. At a minimum, the agency must provide a summary of preliminary findings on complex benthic sites either damaged by fishing or at risk of damage due to a lack of comprehensive habitat regulations, and incorporate those findings into its conclusions.

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[17] DEIS (Table B.3-3 "Long-term Effects Indices (Percent Reduction) of Habitat Features within Intersections of Species Distributions and Habitat Types, Including Percent of Each Species Distribution within Each Habitat Type").

[18] Draft Minutes, Scientific Statistical Committee, October 6-7, 2003 at 2.

Adverse Impacts Analyses in Other Regions

As described above, the agency's conclusion in the North Pacific, home to the largest fisheries in North America, that the effects of fishing on EFH are not adverse enough to require minimization, runs counter to the national and international scientific consensus and literature. It is also at odds with the agency's own conclusions in other regions, further evidence of its arbitrary nature. See, e.g., New England Scallops Amendment 10 FEIS (concluding that there are more than minimal and not temporary fisheries effects on EFH and imposing minimization measures); Gulf of Mexico Generic EFH Amendment DEIS (same, including prohibition of various gear types over coral reefs); Caribbean Generic EFH Amendment DEIS (same, including recommended prohibition of trawling over all Caribbean EEZ coral habitat); Northeast Multispecies Groundfish Amendment 13 FEIS (concluding that adverse impacts from bottom trawling gear occur throughout most of the northeast region on a variety of substrates and imposing minimization measures).

Process

The unsupported conclusion that persistent site-specific and habitat-wide impacts from industrial fisheries are not "adverse effects" stems largely from the Fisheries Service's failure to meet its obligation as the federal agency tasked with providing stewardship for our public resources. Throughout the process, the Fisheries Service deferred to the industry-dominated NPFMC at the expense of both the public and the agency scientists. This resulted in a narrowly focused emphasis on maintaining the current extraction policies that benefit industrial fishing interests, a politicization of the NEPA process that subverted science, and an exclusionary "public" process.

For example, instead of undertaking a scientifically driven NEPA process that was responsive to EFH mandates, the agency deferred to the NPFMC, which is not the action agency. This deference resulted in unlawful and narrow guidance for the entire EIS process.

At the outset, the NPFMC passed a problem statement "to guide" the EFH analysis. It states both that the NPFMC "will undertake an EIS analysis" and that

> [t]he intent of the Council is for those FMP species where data are available, habitat measures should be applied to minimize the effects of fishing on habitat essential to continued productivity of the managed species.[19]

The Fisheries Service designed the structure and analysis of the DEIS in response to the NPFMC's draft problem statement. This problem statement, however, is inconsistent with the EFH regulations and sets an unlawful analytical hurdle which cannot currently be overcome. As previously recognized by the agency:

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[19] DEIS (1-3). This language is actually a watered down version of an October 2002 NPFMC motion that stated that the EIS would consider only management measures to address "identified adverse impacts of fishing on habitat essential to the continued productivity of FMP species." Instead of asserting the Fisheries Service's responsibility as the action agency, the Fisheries Service indicated to the NPFMC that the problem statement was legal, but that "inconsistencies between the Council's language and the applicable regulations could lead to confusion for the public as well as the staff preparing the EIS." See November 29, 2002 letter of James W. Balsiger, NMFS Alaska Region Administrator to Mr. David Benton, NPFMC Chairman.

> It is not appropriate to require definitive proof of a link between fishing impacts to EFH and reduced stock productivity before councils can take action to minimize adverse fishing impacts to EFH to the extent practicable. Such requirements would raise the threshold for action above that set by the Magnuson-Stevens Act.[20]

Despite this, the Fisheries Service impermissibly requires evidence beyond that required by the EFH Final Rule and requires stock productivity to have declined to crisis levels (less than Minimum Stock Size Thresholds) before action is taken to mitigate the identified reductions in quantity and quality of EFH.

Even though the Fisheries Service deferred the EIS process to the NPFMC, both bodies ignored without explanation the advice of the NPFMC's Scientific Statistical Committee ("SSC"), which stated that "linkages between habitat and productivity of FMP species are virtually impossible to establish experimentally."[21] The NPFMC instead passed a motion reiterating language nearly identical to that which industry suggested, namely, that the EIS should clarify that the threshold for mitigation is evidence that habitat degradation "has the high probability of negatively impacting the productivity of FMP species."[22]

Even were the productivity approach lawful, which it is not, the Fisheries Service failed to draw a conclusion of adverse effects even in the face of evidence of declining productivity. Table 4.4-2, for example, indicates that out of ten listed species in the BSAI, three are declining and four are recently stable following a decline. The GOA, although more stable, also lists more declining species than increasing species. The DEIS contains no rational explanation of the relationship between these facts and the agency's conclusions.

In addition to the adoption of unlawful standards that drove the analysis, a further problem with the Fisheries Service's impermissible delegation of NEPA process to the NPFMC is reflected in the design of alternatives by non-agency individuals with an economic interest in the outcome. This process resulted in redundant mitigation alternatives unresponsive to the EFH and NEPA mandates, scientific literature and data. The SSC criticized preliminary alternatives as unresponsive to serious concerns from the scientists responsible for evaluating NPFMC actions:

> The SSC heard a status report on this issue at its December meeting. As noted in its minutes, the SSC *"found the alternatives difficult to evaluate because there was no statement of goals or objectives of the mitigation effort. There was no clear rationale for the particular closures proposed."* . . . In addition to other comments, the SSC provided a list of 10 items that should be included in the developing EFH documentation. The requested statements of goals, objectives, methods to evaluate success of taking alternative actions, and other requested

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[20] 67 Fed Reg 2343, 2354 (Jan, 17, 2002).
[21] February 2003 Draft Scientific Statistical Committee Minutes.
[22] December 2002 NPFMC EFH Motion.

information have not been provided. All of the previous SSC comments continue to apply, as stated in the December minutes.[23]

The SSC further indicated that the alternatives were unclear in their goals and objectives, that it was unclear if closures were designed to be placed in the least desirable fishing locations, and that the alternatives focused largely on closed areas, while ignoring effort reduction and gear modifications, the other tools recommended by the National Research Council ("NRC") for mitigating the effects of bottom trawling on benthic habitat.[24] This is particularly egregious as the NRC indicated that effort reduction is the "cornerstone of managing the effects of fishing, including, but not limited to, the effects on habitat."[25] Failure to consider fully these tools in full blown alternatives is arbitrary.

Indeed, the alternatives were formulated through an NPFMC process that marginalized science, Alaska native communities, and other public stakeholders without a direct economic interest in the exploitation of public resources. This negotiated process over whose favorite fishing holes would be subject to regulation created inadequate and unlawful alternatives. These include:

- Alternatives that are incomplete and address only the Gulf of Alaska slope
- Alternatives with closures placed only in lightly fished or unfished areas
- Alternatives that do not address the results of the effects of fishing model
- Redundant alternatives
- Alternatives that do not use all of the tools recommended by the NRC
- Alternatives that do not incorporate the data on locations of sensitive species and habitat types
- A narrow range of alternatives
- Alternatives unresponsive to public comments from Alaska native communities and non-industry stakeholders

It is apparent from the record that the Fisheries Service was derelict in delegating the NEPA process to a political arena that is unresponsive to its own scientific committee and that does not represent the broad range of stakeholders for whom the agency is tasked with ensuring stewardship over public resources.

Analysis

While the Fisheries Service assures the public that it used the best available science in determining that there are no adverse effects of fishing on EFH in Alaska, a review of the analytical structure, methodology, and conclusions reveal a carefully crafted justification of the status quo. This is most apparent when, buried deep in the back of the document, the agency outlines how the DEIS relates to the Draft Programmatic Supplemental Environmental Impact Statement for Alaska Groundfish Fisheries ("DPSEIS"), a document to which the agency purports to tier the DEIS.[26]

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[23] February 2003 Draft Scientific Statistical Committee Minutes at 4.
[24] February 2003 Draft Scientific Statistical Committee Minutes at 5.
[25] National Research Council, "Effects of Trawling & Dredging on Seafloor Habitat" at 64.
[26] It is arbitrary to tier this document to a draft EIS that has not yet been finalized. 40 C.F.R. § 1508.28.

The Fisheries Service explains that although the DPSEIS concluded there are cumulative and ongoing "conditionally significant adverse," "long-term," and "possibly irreversible" impacts to habitat, this was premised on an assumption that habitat "might provide functions to managed species" and that "linkages to productivity exist."[27] NMFS explains how these conclusions were made:

> Considering the lack of information on habitat function for species life history stages and the broader scope of the [D]PSEIS, the [D]PSEIS analysis did not depend on specifically demonstrating such linkages.[28]

The Fisheries Service further explains that the DPSEIS was designed to avoid a Type II Error, which would result in the acceptance of a false hypothesis that fishing has no effect on habitat. The agency undertook this approach because the rigorous tests of available data to avoid a Type I Error (incorrectly rejecting a hypothesis that fishing has no effect on habitat) were unavailable due to data limitations.[29] Minimizing Type II Error is a reasonable, precautionary approach which should be undertaken when the consequences of making a wrong conclusion can be catastrophic. The DPSEIS recognized the danger of reaching a wrong conclusion that fishing had no effect on habitat, and took steps to minimize the chance of this happening. In the EFH DEIS, the agency notes that the approach taken in the DPSEIS (reducing the probability of a Type II Error) is "more precautionary and is more responsive to both EFH mandates and the public comment received on the 2001 draft PSEIS."[30]

In contrast, the EFH analysis, which was supposed to be "narrower" in scope, took the opposite approach, minimizing precaution and maximizing the likelihood of catastrophic consequences. It is scientifically irresponsible to increase the likelihood of accepting a false hypothesis of no effect of fishing on habitat (a Type II Error) by undertaking a focus on Type I Error for which the data do not exist.

The Fisheries Service fails to explain why it eschewed an approach responsive to the EFH mandates when making the opposite conclusion in the DEIS, a document being prepared under the EFH mandates and tiered to the DPSEIS. It is arbitrary to take this approach given the agency's admission that avoiding Type II Error is "more responsive to...EFH mandates" and given Congress' habitat protection demands in the MSA.

Rather than employ this approach, the agency instead explains that the DEIS is analytically structured differently and that the ability of a stock to remain above its Minimum Stock Size Threshold ("MSST") (a level that would require an overfished designation and that would trigger rebuilding under the MSA) was the **primary consideration** for whether or not there were adverse impacts from fishing on EFH.[31] NMFS then states, however, that evaluating scientists

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[27] DEIS (4-401).
[28] DEIS (4-401).
[29] DEIS (4-400).
[30] DEIS (4-401).
[31] DEIS (4-40, 4-402).

were "given the latitude to consider other sources of information."[32] These other sources of information included "ecosystem functions that required a higher threshold level" than MSST.[33] No stock, however, had a level of information high enough to meet that burden of proof. Furthermore, the effects on stocks with such a low level of information that MSSTs could not be estimated, were simply labeled "unknown," a designation which triggers no mitigation requirements.

This treatment of unknown and uncertain information continues throughout the document. Several examples indicate that the Fisheries Service has drawn unsupported conclusions of no effects even when the best available science indicates otherwise. One example is that of shortraker and rougheye rockfish in the Aleutian Islands. Although these species have been seen in coral habitat during submersible work and are assumed to have been repeatedly overfished while managed as part of a species complex,[34] the analysis of fishing effects indicates neither of these facts. It simply labels the effects "unknown"[35] and sweeps these species, which are amongst the longest-lived marine fish on the planet, into the general conclusion that fishing has "no adverse effects." Similarly, many long-lived and slow-growing rockfish and other species with low reproductive rates are either ignored or given cursory review and labeled "unknown."[36] A third example is sablefish, for which the reviewing scientist indicated "caution is warranted" because hard coral is reduced 12-31% in the areas comprising 89% of sablefish habitat.[37]

Thus NMFS justifies its conclusion of no adverse effects of fishing on EFH by ignoring its own prior conclusions, rejecting a precautionary approach, raising the burden of proof beyond that which is attainable, ignoring the results of its own model, and substituting the MSA's overfishing provisions for the MSA's EFH provisions. This analytical format, as well as the resultant decision to undertake no new management measures to protect EFH by minimizing the adverse effects of fishing, cannot be reconciled with the facts or with the Fisheries Service's claim that Alaskan fisheries are managed under "a precautionary approach for uncertainty."[38]

The Fisheries Service also undertakes more subtle manipulations of the analysis to justify the status quo and reaches a conclusion of no adverse effects of fishing on EFH. These include:

- The agency assigns a value of E+ for the effect on the environment of all future management measures. As demonstrated by the recent increase in GOA TAC during the breakout of skates and the planned opening of the AI pollock fishery, not all management measures will have positive environmental benefits.[39]

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[32] DEIS (4-40).
[33] DEIS (4-40).
[34] See, e.g., Appendix A, Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/ Aleutian Islands Regions. NPFMC. November 2003, at 673-674.
[35] DEIS (B-51).
[36] DEIS (B-51).
[37] DEIS (B-37).
[38] DEIS (3-73).
[39] DEIS (Table ES-1). The DEIS repeatedly refers to the fact that past actions were an attempt to reverse the negative habitat trends of the past and that future actions will do the same.

- The agency assigns a value of E- for costs of all management measures.[40]
- Figure ES-1 in the Executive Summary purports to show areas closed year-round to bottom trawling. Since NMFS states that it is often the first tow that causes the most damage to habitat, this chart should either show only areas closed year-round to **all** bottom trawling or acknowledge that it represents only closures to some fisheries, but that bottom trawling is permitted in these areas.
- The status quo alternative is compared to the status quo, so the public is informed in the Executive Summary's Environmental Consequences Table that status quo management will have no adverse effects on the environment. This is untrue, as the analysis in Appendix B indicates persistent negative effects on habitat under the status quo.
- The cumulative effects analysis indicates an adverse cumulative effect on habitat and ecosystems only if the effect of an alternative would be additive to an existing adverse trend or cause an adverse trend.[41] This entrenches past and present damage, shifts the baseline, and misleads the public into thinking that potentially irreversible impacts are not significant if they are already occurring.

Ecosystem-Based Management

Despite the fact that the Fisheries Service and the NPFMC neither have explicitly addressed habitat in a comprehensive manner in Alaska nor used a precautionary approach toward habitat, the agency proclaims proudly that the policies presently in place in Alaska "generally achieve all of the measures recommended by the NRC, so current fishery management policies can be considered an ecosystem-based approach."[42]

The EFH definition of adverse effects includes damage to ecosystem components and indicates that "healthy ecosystems" are those where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself. Such ecosystems are similar to comparable, undisturbed ecosystems with regard to standing crop, productivity, nutrient dynamics, trophic structure, species richness, stability, resilience, contamination levels, and the frequency of diseased organisms.[43] While it is not expected that fishing can be undertaken without any impact on ecosystems, it is apparent from the DEIS that prey species, habitat complexity and benthic biodiversity will continue to be adversely affected in a manner that is not comparable to healthy ecosystems.[44]

Furthermore, placing the burden of proof on fisheries and inferring conclusions of no adverse effect violates the very ecosystem-based principles that NMFS proclaims the management scheme "generally achieves." This management approach, outlined in the Ecosystem Principles Advisory Panel's 1998 report entitled "Ecosystem-Based Fisheries Management" is based upon rectifying past mistakes in fisheries management. According to the Panel:

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[40] DEIS (Table ES-1). The Fisheries Service assumes that any movement of the fisheries will result in either reduced catch or excessive operational costs. This assumption ignores the science of benefits associated with closures and predetermines that, in the face of uncertainty, the Fisheries Service will deem closures unwarranted due to unquantifiable benefits and presumed high costs.

[41] DEIS (4-403).

[42] DEIS (3-73).

[43] 50 C.F.R. § 600.810(3).

[44] See, e.g., Table ES-1.

> The two hardest lessons are likely to be shifting the burden of proof to the fishery to demonstrate that the ecosystem will not be damaged by fishing, and to develop a truly precautionary approach to fisheries management.[45]

Both the DEIS framework and the NPFMC's Problem Statement violate these principles. In order to meet the standards that the Fisheries Service claims are being met, the agency must adopt both an analytical approach that better meets the EFH mandate (such as that in the DPSEIS habitat analysis) and comprehensive regulations that minimize the long-term and possibly irreversible impacts to habitat. These regulations must be designed to incorporate ecosystem requirements into fisheries management decisions, must include marine protected areas as a buffer against uncertainty as opposed to in response to management crises (in this instance, protecting benthic habitat from gear impacts), and must be based upon a truly precautionary principle that adequately deals with uncertainty.

Conclusion

Industrial fishing in Alaska causes serious impacts to habitat. The Fisheries Service is legally required to minimize these effects. The agency's failure to implement a comprehensive regulatory system specifically designed to protect habitat is a failure to live up to the agency's responsibility as steward of our public resources and its legal mandates. By ignoring readily available science, skewing the analysis, and delegating the requisite public process to an industry-dominated process, the agency allows ongoing harm to Alaskan ecosystems. Restrictions on damaging gear, and in particular, bottom trawling, are mandated by the MSA and warranted under the scientific literature on habitat.

The very first page of the Executive Summary warns the reader that "[s]ubstantial differences of opinion exist as to the extent and significance of habitat alteration"[46] caused by bottom trawling. There is, however, general scientific consensus that bottom trawling has wide ranging effects on habitats and ecosystems. These include:

- changes in physical habitat of ecosystems
- changes in biologic structure of ecosystems
- reductions in benthic habitat complexity
- changes in availability of organic matter for microbial food webs
- changes in species composition
- reductions in biodiversity[47]

These adverse effects are occurring in Alaskan waters, are long-term and substantial, and must be minimized. Although the agency arbitrarily concludes that damage is minimal, the DEIS states quite clearly that "there are long-term effects of fishing, particularly bottom trawling, on

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[45] Ecosystem Principles Advisory Panel, "Ecosystem-Based Fisheries Management" at 37.
[46] DEIS (ES-1).
[47] National Research Council, "Effects of Trawling & Dredging on Seafloor Habitat" at 29.

benthic habitat features of Alaska."[48] As explained above, these impacts are both habitat-wide and site specific.

The Fisheries Service must substantially revise its analysis in the DEIS, take the requisite hard look at industrial fishing in Alaskan waters, and minimize the adverse effects of fishing on EFH by instituting comprehensive regulatory measures that respond to the best available science and data.

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[48] DEIS (ES-7).